

6. CONTRIBUTIONS TO THE FAUNA OF ROTTNEST ISLAND.

No. II.

POLYPLACOPHORA.

(With Seven Figures 10-16.)

By

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Communicated by L. Glauert.

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I have been asked by Mr. L. Glauert, Curator of the Western Australian Museum, Perth, to determine and describe a small collection of Chitons, made by himself at Rottnest Island. He has suggested that this form be the second of a series of papers on the fauna of this Island and that in it be included any published records from the same locality. The collection now described is not numerically extensive but is of exceptional interest in that it contains two species hitherto undescribed, one a most striking new form of *Notoplax* and the other a little inconspicuous member of the genus *Lepidopleurus*; both these are described and figured.

At the end of this paper is presented a brief resume of the revised classification of Polyplacophora proposed by the writer in consequence of a recent discovery of a connecting link between palaeozoic forms and one phylum of living chitons, viz., that of the ACANTHOCHITONIDAE. This hitherto missing link was discovered in the Oligocene (Balcombian) beds, near Mornington, Victoria, and its characters fully described by the writer under the generic name *Protochiton*, in his monograph on Australian Fossil Polyplacophora (Proc. Roy. Soc. Vict., vol. xxxvii. (New Series), Pt. II., pp. 170-205, 1925.)

FAMILY ACANTHOCHITONIDAE.

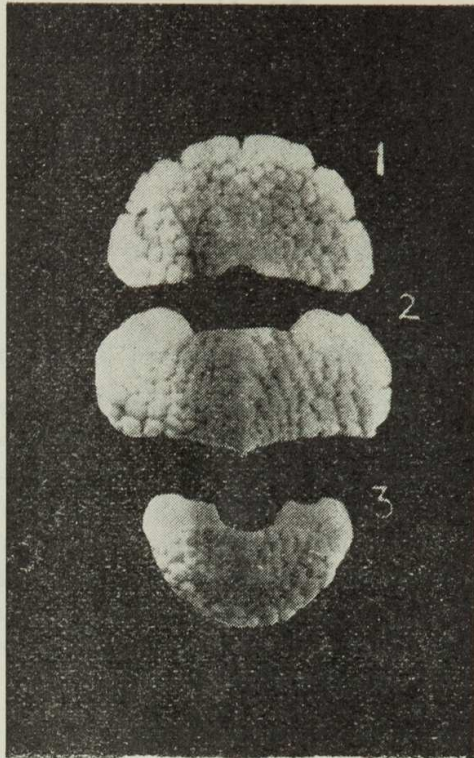
Notoplax rotnestensis n. sp.

General appearance.—Elliptical, carinated, girdle very broad, slightly encroaching at the sutures, appearing under a simple lense leathery; shell very strongly sculptured with coarse granules, diagonal fold or rib well defined, as also are the five ray ribs of the anterior valve, blotched green, pink and white.

Anterior valve.—Possesses five ray ribs or folds, corresponding with the five slits, the whole surface decorated with closely packed, highly raised, convex granules, mostly circular but becoming rapidly larger and more ovate towards the girdle each grain overhangs its base, making the inter-spaces unusually deep.

Posterior valve.—Mucro slightly anterior of median, well defined, the slope immediately behind the mucro steep and devoid of granules, dorsal area slightly raised and pinnatifid, smooth; the portion anterior to mucro decorated with longitudinal rows of irregular, coarse, raised grains, which are less convex and more widely spaced than is the case on the other valves; the posterior portion is separated from the anterior by a fold surmounted by irregular grains fully three times the size of those on the anterior portion

of this valve; the rest of this area is closely covered with three rows of large rounded grains placed more or less concentrically, the larger grains to the outside but not equalling those surmounting the fold.



Figs. 10, 11, 12.

Notoplax rottnebstensis, Ashby, Rottnebst Is.:

- (1) Holotype, anterior valve. W.A. Mus., X 6½.
- (2) Holotype, median valve. W.A. Mus., X 6½.
- (3) Holotype, tail valve. W.A. Mus., X 6½.

Median valve.—Valve No. 6, arched rather flat, sideslope slightly convex, angle of divergence 105°; dorsal area well defined, strongly pinnatifid. I count six lateral notches, surface smooth; pleural area crossed irregularly by eight rows of large, irregular, highly-raised, slightly convex grains; those nearest the girdle are longitudinal but becoming more and more diagonal as they approach the dorsal area; some grains abutting on the dorsal area near the anterior margin are elongate, three times as long as wide; the lateral area is separated from the pleural by a diagonal fold which is surmounted by large grains twice the size of the others, but otherwise similar to those of the pleural area; the rest of the lateral area is similar to the pleural.

Articulation.—White, anterior valve slits five and deeply cut, teeth smooth-edged but thick, insertion broad and grooved, upturned at the slits on the upper side; tail valve, teeth irregular, slits 10; median valve, callus present but not pronounced; slits 1/1, insertion thickened and upturned at slit, teeth sharp, sutural laminae broad and rather shallow, sinus between very broad and notched at either side.

Girdle.—Twice the width anteriorly that it is posteriorly, under simple lense has a felty appearance, possesses a girdle fringe composed of a single row of short spicules, hair-tufts are not conspicuous, the tufts when not broken consist of about five slender curved spicules which are tinged with green; there is in one specimen a broad black band across the girdle immediately behind the anterior valve; under 62 mag, the girdle is seen to be densely clothed with minute, flat, smooth, highly polished scales, set almost vertically so that the edges give the felty appearance before referred to.

M e a s u r e m e n t s.—Holotype curled and not measured, paratype figured dry 16.5 x 9.5 mm., holotype anterior valve, 4.5 x 3 mm., tail valve 3.5 x 2.5 mm., median valve 5 x 2.5 mm., angle of divergence 105%.

H a b i t a t.—Bathurst Point, Rottnest Island, Western Australia.

P a r a t y p e s.—(a) Has a blue-coloured girdle, valve 2, mauve, others green; (b) has blue girdle, all valves green; (c) has mauve-coloured girdle and valve 2, rest of valves green. There are two varieties each, of these other examples represent further variations of same colours.

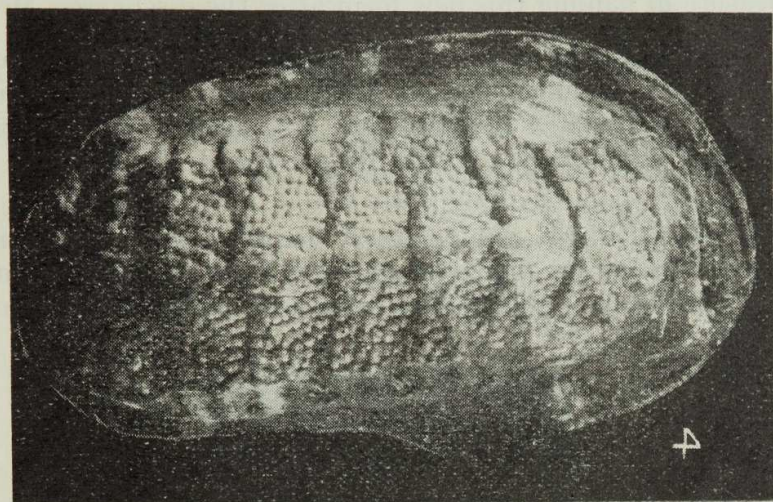


Fig. 13.

Fig. 13.—*Notoplax rottnestensis*, Ashby, Rottnest Is.;
Paratype, whole shell, Ashby, coll., X 5.

C o m m e n t s.—In one example the ray folds of the anterior valve are surmounted by long finger-like, convex granules, and the dorsal area has in some valves a marginal rib. This species differs from *A. subviridis* Torr, in that in the latter species the girdle is clothed with adpressed spicules and the sculpture consists of flat grains, whereas in the species under review the upper girdle clothing is arenaceous and the sculpture is composed of pebble-like grains. This striking species differs widely from any other Acanthoid Chiton and approaches most nearly to the subgenus *Amblyplax* Ashby; the sculpture and the thickened, short, multislit insertion of the tail valve strongly suggest that it is a true representative this subgenus hitherto only known from New Zealand waters, and nearest to *Notoplax (Amblyplax) foveauxensis*, (Ashby), but I will leave the final determination of this point to future study

Sub-family CRYPTOPLACINAE.

Cryptoplax striatus var. *westernensis*, Ashby.

Ashby (Trans. Roy. Soc. S. Aust. vol. xlvii, p. 238, 1923).

Seven examples of this shell were collected by Mr. Glauert at Bathurst Point. Ashby collected one example at the steamer landing on Rottnest Island in 1920, and proposed the varietal name quoted above for this form on the following grounds; "It differs from the typical shell (type locality Kangaroo Island South Australia) in that it shows no sign of the granulose sculpture of the juvenile; it seems from the start to commence the coarse longitudinal ridges, also the spicules of the girdle are both shorter and more

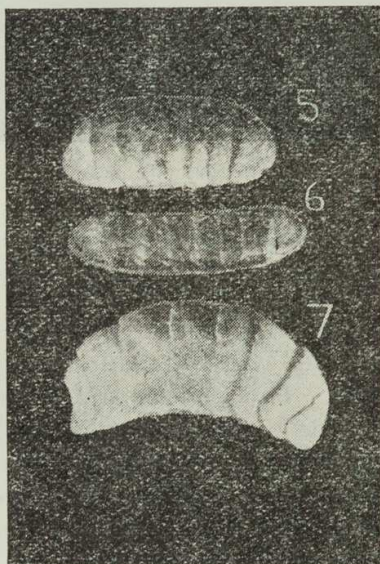
slender than is the case of typical *striatus*." The examples now under review all exhibit the difference in sculpture referred to above, but show rather less variation in the girdle spicules than does Ashby's type. If these characters are constant when a larger series are available from this locality then *westernensis* will deserve subspecific rank.

Lepidopleurus glauerti n. sp.

In the collection made by Mr. Glauert are five examples of a minute Chiton, all curled and preserved in spirit, several with valves detached. I have pleasure in naming this new form after the discoverer, Mr. Glauert.

General appearance.—Elongate, elevated, carinated; decorated with elevated, circular, convex granules which under a simple lense show but little systematic arrangement. The girdle is covered with small, imbricating scales; there is a girdle fringe, colour dirty white to creamy white.

Anterior valve.—Slope steep, convex, and valve more elevated than either *L. badius* or *L. matthewsianus*; two strong concentric growth grooves are showing in type, surface evenly decorated with circular, raised convex grains.



Figs. 14, 15, 16.

(5) *Lepidopleurus badius*,

H. and H., N.S.W., Paratype, whole shell, side view, Ashby, coll., X 6.

(6) *Lepidopleurus matthewsianus*,

Bed., S. Australia, whole shell, side view, Ashby, coll., X 6.

(7) *Lepidopleurus glauerti*,

Ashby, Rottneest Is.; Holotype, whole shell, side view. W.A. Mus., X 6.

Posterior valve.—The holotype has not been disarticulated, but the smallest specimen, only about one-fourth the size, has a detached tail valve; in this the mucro is antemedian situated at the anterior third (but in this genus there is a good deal of variation in the position of the mucro within the compass of the same species), the mucro is well defined and the posterior slope concave, but in the small example the posterior portion of this valve is flatter than is the case in the holotype; in this latter the mucro appears almost median; the sculpture consists of similar circular grains to those in the anterior valve.

Median valve.—The dorsal areas ornamented with longitudinal rows of circular, convex grains, these rows continuing in the pleural area but there becoming rapidly indistinct; the grains increase in size and elevation towards the margin and the spacing becomes somewhat irregular; there is no distinction between the pleural and lateral areas; the arrangement of the grains is, as has been before stated, indistinct but more radial than longitudinal; in the lateral area it is transverse not radial. In *L. matthewsianus*, the whole of the pleural area is ornamented with well defined, regular, longitudinal rows of low, partly coalesced granules, and the lateral area is raised and ornamentation radial; in that as well as in *L. badius* the longitudinal rows are proportionally more widely spaced than is the case in *L. glauerti*.

Girdle.—Is clothed with small, loosely imbricating scales, there is a spiculate girdle fringe; in the smallest example a few spicules, longer than these of the fringe, can be seen at the sutures. (As I have elsewhere pointed out, the girdle spicules in the Lepidopleuridae are usually very loosely attached, the presence or absence of such spicules cannot be considered of generic value, in fact owing to this, unless supported by more stable features the presence or absence of girdle spicules can hardly be accepted as of even specific value in members of this genus.)

Measurement.—The holotype dry and curled is 5 x 3.5 mm.

Habitat.—Bathurst Point, Rottnest Island, Western Australia.

In conclusion.—The strong carination easily separates this species from *L. matthewsianus* Bed. As compared with *L. badius* the granular ornamentation is more elevated and the grains placed closer together, the shell more elevated and carinated and less broad, the side slope convex and steeper

Callochiton platessa, Gould.

Torr in (Trans. Roy. Soc. S. Aust. vol. xxxv., p. 96, 1911) records one example from Rottnest Island.

Plaxiphora albida, Blainville.

= *P. costata*, Blainville.

Torr (l.c.) records the finding of this species on Rottnest Island. The writer has found this shell common in suitable places where he has had the opportunity of collecting, as far north as Dongarra.

Ischnochiton torri H. and H.

In the collection made by Mr. Glauert is one example measuring 37 x 17 mm., quite a typical shell. Torr (l.c.) records under the name *I. ustulatus* (not of Reeve) several examples from Rottnest Island.

Ischnochiton virgatus, Reeve.

In the collection are eight examples of this beautiful little Chiton, which show no variation from those from the type locality in South Australia. Iredale and Hull under the name *Autochiton virgatus exaggeratus*, describe as a subspecies a large dark-coloured variant which also occurs in similarly sheltered situations in South Australia, it certainly cannot be considered a geographic race and cannot be recognised as having subspecific rank, neither do they advance sufficient grounds for the adoption of their proposed new genus *Autochiton*.

***Ischnochiton ptychius*, Pilsbry.**

Torr (l.c.) records a single example taken off a buoy between Fremantle and Rottnest Island.

***Ischnochiton contractus*, Reeve.**

= ***I. decussatus*, Reve.**

Torr (l.c.) records under the latter name the taking of two examples off the same buoy as the preceding.

***Ischnochiton (Heterozona) cariosus*, Pilsbry,**

var. ***occidentalis*, Ashby.**

Ashby (l.c.) recorded the taking of a single example off the rocks at the landing-place on Rottnest Island in 1920.

Torr (l.c.) records the taking of this species in numbers on the same island. I have elsewhere pointed out that the wisdom of retaining the name *Heterozona*, even subgenerically, is very doubtful as the chief character upon which the subgenus was founded (large scales scattered amongst the smaller ones) does not appear to be even of subgeneric value.

***Chiton (Ryhssoplax) torrianus*, H. and H.**

Torr (l.c.) records this species from Rottnest Island.

***Liolophura hirtosus* (Peron, M. S.), Dall.**

= ***L. georgianus*, Quoy and Gaimard.**

Torr (l.c.) records this shell from Rottnest Island. I have found this species which is endemic to Western Australia, most numerous wherever I have collected in that state as far north as Dirk Hartog Island.

***Onithochiton scholvieni*, Thiele.**

Mr. Glauert collected one example measuring 45 x 20 mm. when dry, at Bathurst Point, and Torr (l.c.) recorded it under the name *O. quercinus* Gould, this latter being an Eastern Australia species, being common in New South Wales and Queensland, but does not seem to occur in the Northern Territory. This species I have also collected on the southern coasts and also found it most numerous on Dirk Hartog Island and have many examples from between Carnarvon and Maud's Landing.

ADDENDA.

Mr. Glauert has forwarded to me additional material collected by him at Rottnest Island during the month of September, 1928. While he obtained a good deal of interesting material of species recorded earlier in this paper, he has been successful in adding one additional species, viz., *Acanthociton bednalli* var. *johnstoni*, Ashby (Trans. Roy. Soc. S. Austr. vol. 47, p. 231, 1923). This variety was described from specimens obtained north of Carnarvon, Western Australia. In colour markings this beautiful variety is very distinct from normal *A. bednalli*, Pilsbry, but as pointed out in the description (l.c.) no character warranting specific rank has been detected. Mr. Glauert has secured one small specimen. He also has taken a beautifully coloured speci-

men of *Callochiton platessa*, Gould; this example is flesh-pink and differs in minor details from the eastern form but cannot specifically be separated, Thiele in *Fauna Sudwest-Australiens* (Polyplacophora, 1911) records the following from Rottneest Island. *Onithochiton scholvi*. Thiele, *Ischnochiton ustulatus* (non of Reeve = *I. torri* Iredale and May), *Ischnochiton virgatus* Reeve.

On the occasion of a brief visit to Rottneest on October 12th last, Mr. Glauert obtained a second specimen of *Acanthochiton bednalli* var. *johnstoni*, Ashby, and also a juvenile example of *Callistochiton meridionalis*, Ashby.

The discovery that the Phylum ACANTHOCHITONIDAE was not derived from Palaeozoic stock through the family LEIPDOPLEURIDAE, but came through the Australian Fossil family PROTOCHITONIDAE, necessitates a partial revision of our previous conception of the classification of POLYPLACOPHORA. The following Classification in Brief, is presented with the intention of giving expression to this revised conception, chiefly as it affects those groups dealt with in the paper.

REVISED CLASSIFICATION OF POLYPLACOPHORA IN BRIEF.

Order **POLYPLACOPHORA**, Blainville.

I. Suborder **Eoplacophora** Pilsbry. Palaeozoic only.

Family Gryphochitonidae Pilsbry. Palaeozoic only.

II. Suborder **Protochitonina** Ashby.

Family **Protochitonidae** Ashby. Fossil only.

Family ACANTHOCHITONIDAE Hedley.

Subfamily AFOSSOCHITONINAE, Ashby. Fossil only.

Subfamily ACANTHOCHITONINAE, Ashby.

Genus ACANTHOCHITON, Gray, cm. 1821.

Genus NOTOPLAX, H. Adams, 1861.

Notoplax rotnnestensis, Ashby.

Subfamily CRYPTOPLACINAE, Thiele.

Genus CRYPTOPLAX, Blainville, 1818.

Cryptoplax striatus Lam. var. *westernensis*, Ashby, 1923.

III. Suborder **Lepidopleurina** Thiele.

Family **Lepidopleuridae** Pilsbry.

Genus LEPIDOPLEURUS, Risso, 1826.

Lepidopleurus glauerti, Ashby.

IV. Suborder **Chitonina** Thiele.

Family CALLOCHITONIDAE, Thiele.

Subfamily CALLOCHITONINAE, Thiele.

Genus CALLOCHITON, Gray, 1847.

Callochiton platessa, Gould.

Family MOPALIIDAE, Pilsbry.

Genus PLAXIPHORA, Gray, 1847.

Plaxiphora albida, Blainville.

Family ISCHNOCHITONIDAE, Pilsbry.

Subfamily ISCHNOCHITONINAE, Pilsbry.

Genus ISCHNOCHITON, Gray, 1847.

Ischnochiton torri, Iredale and May, 1916.*Ischnochiton virgatus*, Reeve, 1847.*Ischnochiton ptychius*, Pilsbry, 1894.*Ischnochiton contractus*, Reeve, 1847.*Ischnochiton (Heterozona) cariosus*, Dall, 1878.

Family CHITONIDAE, Pilsbry.

Subfamily CHITONINAE, Pilsbry.

Genus CHITON, Linne, 1758.

Subgenus *Rhysoplax*, Thiele, 1893.*Chiton (Rhysoplax) torrianus*, Hedley and Hull, 1910.

Subfamily LIOLOPHURINAE, Pilsbry, 1893.

= ACANTHOPLEURINAE, Thiele, 1910.

Genus LIOLOPHURA, Pilsbry, 1893.

Liolophura hirtosus (Peron M.S.), Blainville, 1825.

Genus ONITHOCHITON, Gray, 1847.

Onithochiton scholvieni, Thiele, 1910.